2004-0025_Sequence_Listing.txt
SEQUENCE LISTING

<110> Sanofi-Aventis Deutschland GmbH

<120> Dual-transfected cell llines as in vitro screening tools for pharmaceutical compound profiling: A model for hepatobiliary elimination

<130> DEAV 2004/0025

<160> 6

<170> PatentIn version 3.2

<210> 1
<211> 1061
<212> DNA
<213> Homo sapiens

<400> 1

```
caggaggatg gaggcccaca acgcgtctgc cccattcaac ttcaccctgc cacccaactt     60

tggcaagcgc cccacagacc tggcactgag cgtcatcctg gtgttcatgt tgttcttcat    120

catgctctcg ctgggctgca ccatggagtt cagcaagatc aaggctcact tatggaagcc    180

taaagggctg gccatcgccc tggtggcaca gtatggcatc atgcccctca cggcctttgt    240

gctgggcaag gtcttccggc tgaagaacat tgaggcactg gccatcttgg tctgtggctg    300

ctcacctgga gggaacctgt ccaatgtctt cagtctggcc atgaaggggg acatgaacct    360

cagcattgtg atgaccacct gctccacctt ctgtgccctt ggcatgatgc ctctcctcct    420

gtacatctac tccaggggga tctatgatgg ggacctgaag gacaaggtgc cctataaagg    480

catcgtgata tcactggtcc tggttctcat tccttgcacc atagggatcg tcctcaaatc    540

taaacggcca caatacatgc gctatgtcat caagggaggg atgatcatca ttctcttgtg    600

cagtgtggcc gtcacagttc tctctgccat caatgtgggg aagagcatca tgtttgccat    660

gacaccactc ttgattgcca cctcctccct gatgccttct attggctttc tgctgggtta    720

tgttctctct gctctcttct gcctcaatgg acggtgcaga cgcactgtca gcatggagac    780

tggatgccaa aatgtccaac tctgttccac catcctcaat gtggcctttc cacctgaagt    840

cattggacca ctttttcttct ttccctcct ctacatgatt ttccagcttg gagaagggct    900

tctcctcatt gccatatttt ggtgctatga gaaattcaag actcccaagg ataaaacaaa    960

aatgatctac acagctgcca caactgaaga aacaattcca ggagctctgg gaaatggcac   1020

ctacaaaggg gaggactgct ccccttgcac agcctagccc t                       1061
```

<210> 2
<211> 3966
<212> DNA
<213> Homo sapiens

<400> 2

```
atgtctgact cagtaattct tcgaagtata aagaaatttg gagaggagaa tgatggtttt      60

gagtcagata aatcatataa taatgataag aaatcaaggt tacaagatga gaagaaaggt     120

gatggcgtta gagttggctt ctttcaattg tttcggtttt cttcatcaac tgacatttgg     180

ctgatgtttg tgggaagttt gtgtgcattt ctccatggaa tagcccagcc aggcgtgcta     240

ctcatttttg gcacaatgac agatgttttt attgactacg acgttgagtt acaagaactc     300

cagattccag gaaaagcatg tgtgaataac accattgtat ggactaacag ttccctcaac     360

cagaacatga caaatggaac acgttgtggg ttgctgaaca tcgagagcga aatgatcaaa     420

tttgccagtt actatgctgg aattgctgtc gcagtactta tcacaggata tattcaaata     480

tgcttttggg tcattgccgc agctcgtcag atacagaaaa tgagaaaatt ttactttagg     540

agaataatga gaatggaaat agggtggttt gactgcaatt cagtggggga gctgaataca     600

agattctctg atgatattaa taaaatcaat gatgccatag ctgaccaaat ggcccttttc     660

attcagcgca tgacctcgac catctgtggt ttcctgttgg gattttttcag gggttggaaa     720

ctgaccttgg ttattatttc tgtcagccct ctcattggga ttggagcagc caccattggt     780

ctgagtgtgt ccaagtttac ggactatgag ctgaaggcct atgccaaagc aggggtggtg     840

gctgatgaag tcatttcatc aatgagaaca gtggctgctt ttggtggtga gaaaagagag     900

gttgaaaggt atgagaaaaa tcttgtgttc gcccagcgtt ggggaattag aaaaggaata     960

gtgatgggat tctttactgg attcgtgtgg tgtctcatct ttttgtgtta tgcactggcc    1020

ttctggtacg gctccacact tgtcctggat gaaggagaat atacaccagg aacccttgtc    1080

cagattttcc tcagtgtcat agtaggagct ttaaatcttg gcaatgcctc tccttgtttg    1140

gaagcctttg caactggacg tgcagcagcc accagcattt ttgagacaat agacaggaaa    1200

cccatcattg actgcatgtc agaagatggt tacaagttgg atcgaatcaa gggtgaaatt    1260

gaattccata atgtgacctt ccattatcct tccagaccag aggtgaagat tctaaatgac    1320

ctcaacatgg ccattaaacc aggggaaatg acagctctgg taggacccag tggagctgga    1380

aaaagtacag cactgcaact cattcagcga ttctatgacc cctgtgaagg aatggtgacc    1440

gtggatggcc atgacattcg ctctcttaac attcagtggc ttagagatca gattgggata    1500

gtggagcaag agccagttct gttctctacc accattgcag aaaatattcg ctatggcaga    1560

gaagatgcaa caatggaaga catagtccaa gctgccaagg aggccaatgc ctacaacttc    1620

atcatggacc tgccacagca atttgacacc cttgttggag aaggaggagg ccagatgagt    1680

ggtggccaga aacaaagggt agctatcgcc agagccctca tccgaaatcc caagattctg    1740

cttttggaca tggccacctc agctctggac aatgagagtg aagccatggt gcaagaagtg    1800

ctgagtaaga ttcagcatgg cacacaatc atttcagttg ctcatcgctt gtctacggtc    1860

agagctgcag ataccatcat tggttttgaa catggcactg cagtggaaag agggacccat    1920
```

```
gaagaattac tggaaaggaa aggtgtttac ttcactctag tgactttgca aagccaggga   1980

aatcaagctc ttaatgaaga ggacataaag gatgcaactg aagatgacat gcttgcgagg   2040

acctttagca gagggagcta ccaggatagt ttaagggctt ccatccggca acgctccaag   2100

tctcagcttt cttacctggt gcacgaacct ccattagctg ttgtagatca taagtctacc   2160

tatgaagaag atagaaagga caaggacatt cctgtgcagg aagaagttga acctgcccca   2220

gttaggagga ttctgaaatt cagtgctcca gaatggccct acatgctggt agggtctgtg   2280

ggtgcagctg tgaacgggac agtcacaccc ttgtatgcct ttttattcag ccagattctt   2340

gggacttttt caattcctga taaagaggaa caaaggtcac agatcaatgg tgtgtgccta   2400

cttttttgtag caatgggctg tgtatctctt ttcacccaat ttctacaggg atatgccttt   2460

gctaaatctg gggagctcct aacaaaaagg ctacgtaaat ttggtttcag ggcaatgctg   2520

gggcaagata ttgcctggtt tgatgacctc agaaatagcc ctggagcatt gacaacaaga   2580

cttgctacag atgcttccca agttcaaggg gctgccggct ctcagatcgg gatgatagtc   2640

aattccttca ctaacgtcac tgtggccatg atcattgcct ctcctttag ctggaagctg   2700

agcctggtca tcttgtgctt cttcccttc ttggctttat caggagccac acagaccagg   2760

atgttgacag gatttgcctc tcgagataag caggccctgg agatggtggg acagattaca   2820

aatgaagccc tcagtaacat ccgcactgtt gctggaattg gaaaggagag gcggttcatt   2880

gaagcacttg agactgagct ggagaagccc ttcaagacag ccattcagaa agccaatatt   2940

tacggattct gctttgcctt tgcccagtgc atcatgttta ttgcgaattc tgcttcctac   3000

agatatggag gttacttaat ctccaatgag gggctccatt tcagctatgt gttcagggtg   3060

atctctgcag ttgtactgag tgcaacagct cttggaagag ccttctctta cacccccaagt   3120

tatgcaaaag ctaaaatatc agctgcacgc tttttttcaac tgctggaccg acaaccccca   3180

atcagtgtat acaatactgc aggtgaaaaa tgggacaact tccaggggaa gattgatttt   3240

gttgattgta aatttacata tccttctcga cctgactcgc aagttctgaa tggtctctca   3300

gtgtcgatta gtccagggca gacactggcg tttgttggga gcagtggatg tggcaaaagc   3360

actagcattc agctgttgga acgtttctat gatcctgatc aagggaaggt gatgatagat   3420

ggtcatgaca gcaaaaaagt aaatgtccag ttcctccgct caaacattgg aattgtttcc   3480

caggaaccag tgttgtttgc ctgtagcata atggacaata tcaagtatgg agacaacacc   3540

aaagaaattc ccatggaaag agtcatagca gctgcaaaac aggctcagct gcatgatttt   3600

gtcatgtcac tcccagagaa atatgaaact aacgttgggt cccagggggtc tcaactctct   3660

agaggggaga acaacgcat tgctattgct cgggccattg tacgagatcc taaaatcttg   3720

ctactagatg aagccacttc tgccttagac acagaaagtg aaaagacggt gcaggttgct   3780
```

```
ctagacaaag ccagagaggg tcggacctgc attgtcattg cccatcgctt gtccaccatc    3840

cagaacgcgg atatcattgc tgtcatggca caggggggtgg tgattgaaaa ggggacccat    3900

gaagaactga tggcccaaaa aggagcctac tacaaactag tcaccactgg atcccccatc    3960

agttga                                                              3966


<210>   3
<211>   4650
<212>   DNA
<213>   Homo sapiens

<400>   3
agtccaggaa tcatgctgga gaagttctgc aactctactt tttggaattc ctcattcctg      60

gacagtccgg aggcagacct gccactttgt tttgagcaaa ctgttctggt gtggattccc     120

ttgggcttcc tatggctcct ggccccctgg cagcttctcc acgtgtataa atccaggacc     180

aagagatcct ctaccaccaa actctatctt gctaagcagg tattcgttgg ttttcttctt     240

attctagcag ccatagagct ggcccttgta ctcacagaag actctggaca agccacagtc     300

cctgctgttc gatataccaa tccaagcctc tacctaggca catggctcct ggttttgctg     360

atccaataca gcagacaatg gtgtgtacag aaaaactcct ggttcctgtc cctattctgg     420

attctctcga tactctgtgg cactttccaa tttcagactc tgatccggac actcttacag     480

ggtgacaatt ctaatctagc ctactcctgc ctgttcttca tctcctacgg attccagatc     540

ctgatcctga tcttttcagc attttcagaa aataatgagt catcaaataa tccatcatcc     600

atagcttcat tcctgagtag cattacctac agctggtatg acagcatcat tctgaaaggc     660

tacaagcgtc ctctgacact cgaggatgtc tgggaagttg atgaagagat gaaaaccaag     720

acattagtga gcaagtttga aacgcacatg aagagagagc tgcagaaagc caggcgggca     780

ctccagagac ggcaggagaa gagctcccag cagaactctg agccaggct gcctggcttg     840

aacaagaatc agagtcaaag ccaagatgcc cttgtcctgg aagatgttga aaagaaaaaa     900

aagaagtctg ggaccaaaaa agatgttcca aaatcctggt tgatgaaggc tctgttcaaa     960

actttctaca tggtgctcct gaaatcattc ctactgaagc tagtgaatga catcttcacg    1020

tttgtgagtc ctcagctgct gaaattgctg atctcctttg caagtgaccg tgacacatat    1080

ttgtggattg gatatctctg tgcaatcctc ttattcactg cggctctcat tcagtctttc    1140

tgccttcagt gttatttcca actgtgcttc aagctgggtg taaaagtacg gacagctatc    1200

atggcttctg tatataagaa ggcattgacc ctatccaact tggccaggaa ggagtacacc    1260

gttggagaaa cagtgaacct gatgtctgtg gatgcccaga agctcatgga tgtgaccaac    1320

ttcatgcaca tgctgtggtc aagtgttcta cagattgtct tatctatctt cttcctatgg    1380

agagagttgg gaccctcagt cttagcaggt gttggggtga tggtgcttgt aatcccaatt    1440
```

```
aatgcgatac tgtccaccaa gagtaagacc attcaggtca aaaatatgaa gaataaagac   1500

aaacgtttaa agatcatgaa tgagattctt agtggaatca agatcctgaa atattttgcc   1560

tgggaacctt cattcagaga ccaagtacaa aacctccgga agaaagagct caagaacctg   1620

ctggccttta gtcaactaca gtgtgtagta atattcgtct tccagttaac tccagtcctg   1680

gtatctgtgg tcacattttc tgtttatgtc ctggtggata gcaacaatat tttggatgca   1740

caaaaggcct tcacctccat taccctcttc aatatcctgc gctttcccct gagcatgctt   1800

cccatgatga tctcctccat gctccaggcc agtgtttcca cagagcggct agagaagtac   1860

ttgggagggg atgacttgga cacatctgcc attcgacatg actgcaattt tgacaaagcc   1920

atgcagtttt ctgaggcctc ctttacctgg gaacatgatt cggaagccac agtccgagat   1980

gtgaacctgg acattatggc aggccaactt gtggctgtga taggccctgt cggctctggg   2040

aaatcctcct tgatatcagc catgctggga gaaatggaaa atgtccacgg gcacatcacc   2100

atcaagggca ccactgccta tgtcccacag cagtcctgga ttcagaatgg caccataaag   2160

gacaacatcc tttttggaac agagtttaat gaaaagaggt accagcaagt actggaggcc   2220

tgtgctctcc tcccagactt ggaaatgctg cctggaggag atttggctga gattggagag   2280

aagggtataa atcttagtgg gggtcagaag cagcggatca gcctggccag agctacctac   2340

caaaatttag acatctatct tctagatgac cccctgtctg cagtggatgc tcatgtagga   2400

aaacatattt ttaataaggt cttgggcccc aatggcctgt tgaaaggcaa gactcgactc   2460

ttggttacac atagcatgca ctttcttcct caagtggatg agattgtagt tctggggaat   2520

ggaacaattg tagagaaagg atcctacagt gctctcctgg ccaaaaaagg agagtttgct   2580

aagaatctga agacatttct aagacataca ggccctgaag aggaagccac agtccatgat   2640

ggcagtgaag aagaagacga tgactatggg ctgatatcca gtgtggaaga gatccccgaa   2700

gatgcagcct ccataaccat gagaagagag aacagctttc gtcgaacact tagccgcagt   2760

tctaggtcca atggcaggca tctgaagtcc ctgagaaact ccttgaaaac tcggaatgtg   2820

aatagcctga aggaagacga agaactagtg aaaggacaaa aactaattaa gaaggaattc   2880

atagaaactg gaaaggtgaa gttctccatc tacctggagt acctacaagc aataggattg   2940

ttttcgatat tcttcatcat ccttgcgttt gtgatgaatt ctgtggcttt tattggatcc   3000

aacctctggc tcagtgcttg gaccagtgac tctaaaatct tcaatagcac cgactatcca   3060

gcatctcaga gggacatgag agttggagtc tacggagctc tgggattagc ccaaggtata   3120

tttgtgttca tagcacattt ctggagtgcc tttggtttcg tccatgcatc aaatatcttg   3180

cacaagcaac tgctgaacaa tatccttcga gcacctatga gattttttga cacaacaccc   3240

acaggccgga ttgtgaacag gtttgccggc gatatttcca cagtggatga caccctgcct   3300

cagtccttgc gcagctggat tacatgcttc ctggggataa tcagcacccc tgtcatgatc   3360
```

```
tgcatggcca ctcctgtctt caccatcatc gtcattcctc ttggcattat ttatgtatct    3420

gttcagatgt tttatgtgtc tacctcccgc cagctgaggc gtctggactc tgtcaccagg    3480

tccccaatct actctcactt cagcgagacc gtatcaggtt tgccagttat ccgtgccttt    3540

gagcaccagc agcgatttct gaaacacaat gaggtgagga ttgacaccaa ccagaaatgt    3600

gtcttttcct ggatcacctc caacaggtgg cttgcaattc gcctggagct ggttgggaac    3660

ctgactgtct tcttttcagc cttgatgatg gttatttata gagataccct aagtggggac    3720

actgttggct ttgttctgtc caatgcactc aatatcacac aaaccctgaa ctggctggtg    3780

aggatgacat cagaaataga gaccaacatt gtggctgttg agcgaataac tgagtacaca    3840

aaagtggaaa atgaggcacc ctgggtgact gataagaggc ctccgccaga ttggcccagc    3900

aaaggcaaga tccagtttaa caactaccaa gtgcggtacc gacctgagct ggatctggtc    3960

ctcagaggga tcacttgtga cattggtagc atggagaaga ttggtgtggt gggcaggaca    4020

ggagctggaa agtcatccct cacaaactgc ctcttcagaa tcttagaggc tgccggtggt    4080

cagattatca ttgatggagt agatattgct tccattgggc tccacgacct ccgagagaag    4140

ctgaccatca tcccccagga ccccatcctg ttctctggaa gcctgaggat gaatctcgac    4200

cctttcaaca actactcaga tgaggagatt tggaaggcct tggagctggc tcacctcaag    4260

tcttttgtgg ccagcctgca acttgggtta tcccacgaag tgacagaggc tggtggcaac    4320

ctgagcatag gccagaggca gctgctgtgc ctgggcaggg ctctgcttcg gaaatccaag    4380

atcctggtcc tggatgaggc cactgctgcg gtggatctag agacagacaa cctcattcag    4440

acgaccatcc aaaacgagtt cgcccactgc acagtgatca ccatcgccca caggctgcac    4500

accatcatgg acagtgacaa ggtaatggtc ctagacaacg gaagattat agagtgcggc    4560

agccctgaag aactgctaca aatccctgga cccttttact ttatggctaa ggaagctggc    4620

attgagaatg tgaacagcac aaaattctag                                      4650
```

<210> 4
<211> 6433
<212> DNA
<213> Artificial Sequence

<220>
<223> Plasmid

<400> 4

```
gacggatcgg gagatctccc gatcccctat ggtgcactct cagtacaatc tgctctgatg     60

ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggtcgct gagtagtgcg    120

cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc    180

ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatacg cgttgacatt    240
```

```
gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata    300

tggagttccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc    360

cccgcccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc    420

attgacgtca atgggtggag tatttacggt aaactgccca cttggcagta catcaagtgt    480

atcatatgcc aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt    540

atgcccagta catgacctta tgggactttc ctacttggca gtacatctac gtattagtca    600

tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg    660

actcacgggg atttccaagt ctccacccca ttgacgtcaa tgggagtttg ttttggcacc    720

aaaatcaacg ggactttcca aaatgtcgta acaactccgc cccattgacg caaatgggcg    780

gtaggcgtgt acggtgggag gtctatataa gcagagctct ctggctaact agagaaccca    840

ctgcttactg gcttatcgaa attaatacga ctcactatag ggagacccaa gctggctagc    900

gtttaaactt aagcttggta ccgagctcgg atcccaggag gatggaggcc cacaacgcgt    960

ctgccccatt caacttcacc ctgccaccca actttggcaa gcgccccaca gacctggcac   1020

tgagcgtcat cctggtgttc atgttgttct tcatcatgct ctcgctgggc tgcaccatgg   1080

agttcagcaa gatcaaggct cacttatgga agcctaaagg gctggccatc gccctggtgg   1140

cacagtatgg catcatgccc ctcacggcct ttgtgctggg caaggtcttc cggctgaaga   1200

acattgaggc actggccatc ttggtctgtg gctgctcacc tggagggaac ctgtccaatg   1260

tcttcagtct ggccatgaag ggggacatga acctcagcat tgtgatgacc acctgctcca   1320

ccttctgtgc ccttggcatg atgcctctcc tcctgtacat ctactccagg gggatctatg   1380

atggggacct gaaggacaag gtgccctata aaggcatcgt gatatcactg gtcctggttc   1440

tcattccttg caccataggg atcgtcctca aatctaaacg gccacaatac atgcgctatg   1500

tcatcaaggg agggatgatc atcattctct tgtgcagtgt ggccgtcaca gttctctctg   1560

ccatcaatgt ggggaagagc atcatgtttg ccatgacacc actcttgatt gccacctcct   1620

ccctgatgcc ttctattggc tttctgctgg gttatgttct ctctgctctc ttctgcctca   1680

atggacggtg cagacgcact gtcagcatgg agactggatg ccaaaatgtc caactctgtt   1740

ccaccatcct caatgtggcc tttccacctg aagtcattgg accacttttc ttctttcccc   1800

tcctctacat gatttttcag cttggagaag ggcttctcct cattgccata ttttggtgct   1860

atgagaaatt caagactccc aaggataaaa caaaaatgat ctacacagct gccacaactg   1920

aagaaacaat tccaggagct ctgggaaatg gcacctacaa aggggaggac tgctcccctt   1980

gcacagccta gcccttctag agggcccgtt taaacccgct gatcagcctc gactgtgcct   2040

tctagttgcc agccatctgt tgtttgcccc tcccccgtgc cttccttgac cctggaaggt   2100

gccactccca ctgtcctttc ctaataaaat gaggaaattg catcgcattg tctgagtagg   2160
```

```
tgtcattcta ttctggggggg tggggtgggg caggacagca aggggggagga ttgggaagac    2220

aatagcaggc atgctgggga tgcggtgggc tctatggctt ctgaggcgga aagaaccagc    2280

tggggctcta gggggtatcc ccacgcgccc tgtagcggcg cattaagcgc ggcgggtgtg    2340

gtggttacgc gcagcgtgac cgctacactt gccagcgccc tagcgcccgc tcctttcgct    2400

ttcttccctt cctttctcgc cacgttcgcc ggctttcccc gtcaagctct aaatcggggg    2460

ctcccctttag ggttccgatt tagtgcttta cggcacctcg accccaaaaa acttgattag    2520

ggtgatggtt cacgtagtgg gccatcgccc tgatagacgg tttttcgccc tttgacgttg    2580

gagtccacgt tctttaatag tggactcttg ttccaaactg gaacaacact caaccctatc    2640

tcggtctatt cttttgattt ataagggatt ttgccgattt cggcctattg gttaaaaaat    2700

gagctgattt aacaaaaatt taacgcgaat taattctgtg gaatgtgtgt cagttagggt    2760

gtggaaagtc cccaggctcc ccagcaggca gaagtatgca aagcatgcat ctcaattagt    2820

cagcaaccag gtgtggaaag tccccaggct ccccagcagg cagaagtatg caaagcatgc    2880

atctcaatta gtcagcaacc atagtcccgc ccctaactcc gcccatcccg ccccctaactc    2940

cgcccagttc cgcccattct ccgccccatg gctgactaat ttttttttatt tatgcagagg    3000

ccgaggccgc ctctgcctct gagctattcc agaagtagtg aggaggcttt tttggaggcc    3060

taggcttttg caaaaagctc ccgggagctt gtatatccat tttcggatct gatcaagaga    3120

caggatgagg atcgtttcgc atgattgaac aagatggatt gcacgcaggt tctccggccg    3180

cttgggtgga gaggctattc ggctatgact gggcacaaca gacaatcggc tgctctgatg    3240

ccgccgtgtt ccggctgtca gcgcaggggc gcccggttct ttttgtcaag accgacctgt    3300

ccggtgccct gaatgaactg caggacgagg cagcgcggct atcgtggctg ccacgacgg    3360

gcgttccttg cgcagctgtg ctcgacgttg tcactgaagc gggaagggac tggctgctat    3420

tgggcgaagt gccggggcag gatctcctgt catctcacct tgctcctgcc gagaaagtat    3480

ccatcatggc tgatgcaatg cggcggctgc atacgcttga tccggctacc tgcccattcg    3540

accaccaagc gaaacatcgc atcgagcgag cacgtactcg gatggaagcc ggtcttgtcg    3600

atcaggatga tctggacgaa gagcatcagg ggctcgcgcc agccgaactg ttcgccaggc    3660

tcaaggcgcg catgcccgac ggcgaggatc tcgtcgtgac ccatggcgat gcctgcttgc    3720

cgaatatcat ggtggaaaat ggccgctttt ctggattcat cgactgtggc cggctgggtg    3780

tggcggaccg ctatcaggac atagcgttgg ctacccgtga tattgctgaa gagcttggcg    3840

gcgaatgggc tgaccgcttc ctcgtgcttt acggtatcgc cgctcccgat tcgcagcgca    3900

tcgccttcta tcgccttctt gacgagttct tctgagcggg actctggggt tcgaaatgac    3960

cgaccaagcg acgcccaacc tgccatcacg agatttcgat tccaccgccg ccttctatga    4020
```

Page 8

```
aaggttgggc ttcggaatcg ttttccggga cgccggctgg atgatcctcc agcgcgggga   4080

tctcatgctg gagttcttcg cccacccaa cttgtttatt gcagcttata atggttacaa   4140

ataaagcaat agcatcacaa atttcacaaa taaagcattt ttttcactgc attctagttg   4200

tggtttgtcc aaactcatca atgtatctta tcatgtctgt ataccgtcga cctctagcta   4260

gagcttggcg taatcatggt catagctgtt tcctgtgtga aattgttatc cgctcacaat   4320

tccacacaac atacgagccg gaagcataaa gtgtaaagcc tggggtgcct aatgagtgag   4380

ctaactcaca ttaattgcgt tgcgctcact gcccgctttc cagtcgggaa acctgtcgtg   4440

ccagctgcat taatgaatcg gccaacgcgc ggggagaggc ggtttgcgta ttgggcgctc   4500

ttccgcttcc tcgctcactg actcgctgcg ctcggtcgtt cggctgcggc gagcggtatc   4560

agctcactca aaggcggtaa tacggttatc cacagaatca ggggataacg caggaaagaa   4620

catgtgagca aaaggccagc aaaaggccag gaaccgtaaa aaggccgcgt tgctggcgtt   4680

tttccatagg ctccgccccc ctgacgagca tcacaaaaat cgacgctcaa gtcagaggtg   4740

gcgaaacccg acaggactat aaagatacca ggcgtttccc cctggaagct ccctcgtgcg   4800

ctctcctgtt ccgaccctgc cgcttaccgg atacctgtcc gcctttctcc cttcgggaag   4860

cgtggcgctt tctcatagct cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc   4920

caagctgggc tgtgtgcacg aacccccgt tcagcccgac cgctgcgcct tatccggtaa   4980

ctatcgtctt gagtccaacc cggtaagaca cgacttatcg ccactggcag cagccactgg   5040

taacaggatt agcagagcga ggtatgtagg cggtgctaca gagttcttga agtggtggcc   5100

taactacggc tacactagaa gaacagtatt tggtatctgc gctctgctga agccagttac   5160

cttcggaaaa agagttggta gctcttgatc cggcaaacaa accaccgctg gtagcggttt   5220

ttttgtttgc aagcagcaga ttacgcgcag aaaaaaagga tctcaagaag atcctttgat   5280

cttttctacg gggtctgacg ctcagtggaa cgaaaactca cgttaaggga ttttggtcat   5340

gagattatca aaaaggatct tcacctagat ccttttaaat taaaaatgaa gttttaaatc   5400

aatctaaagt atatatgagt aaacttggtc tgacagttac caatgcttaa tcagtgaggc   5460

acctatctca gcgatctgtc tatttcgttc atccatagtt gcctgactcc ccgtcgtgta   5520

gataactacg atacgggagg gcttaccatc tggccccagt gctgcaatga taccgcgaga   5580

cccacgctca ccggctccag atttatcagc aataaaccag ccagccggaa gggccgagcg   5640

cagaagtggt cctgcaactt tatccgcctc catccagtct attaattgtt gccgggaagc   5700

tagagtaagt agttcgccag ttaatagttt gcgcaacgtt gttgccattg ctacaggcat   5760

cgtggtgtca cgctcgtcgt ttggtatggc ttcattcagc tccggttccc aacgatcaag   5820

gcgagttaca tgatccccca tgttgtgcaa aaaagcggtt agctccttcg gtcctccgat   5880

cgttgtcaga agtaagttgg ccgcagtgtt atcactcatg gttatggcag cactgcataa   5940
```

```
ttctcttact gtcatgccat ccgtaagatg cttttctgtg actggtgagt actcaaccaa    6000

gtcattctga gaatagtgta tgcggcgacc gagttgctct tgcccggcgt caatacggga    6060

taataccgcg ccacatagca gaactttaaa agtgctcatc attggaaaac gttcttcggg    6120

gcgaaaactc tcaaggatct taccgctgtt gagatccagt tcgatgtaac ccactcgtgc    6180

acccaactga tcttcagcat ctttttactt caccagcgtt tctgggtgag caaaaacagg    6240

aaggcaaaat gccgcaaaaa agggaataag ggcgacacgg aaatgttgaa tactcatact    6300

cttccttttt caatattatt gaagcattta tcagggttat tgtctcatga gcggatacat    6360

atttgaatgt atttagaaaa ataaacaaat aggggttccg cgcacatttc cccgaaaagt    6420

gccacctgac gtc                                                       6433
```

```
<210>   5
<211>   9043
<212>   DNA
<213>   Artificial Sequence

<220>
<223>   Plasmid

<400>   5
gacggatcgg gagatctccc gatcccctat ggtcgactct cagtacaatc tgctctgatg      60

ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggtcgct gagtagtgcg     120

cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc     180

ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatacg cgttgacatt     240

gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata     300

tggagttccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc     360

cccgcccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc     420

attgacgtca atgggtggac tatttacggt aaactgccca cttggcagta catcaagtgt     480

atcatatgcc aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt     540

atgcccagta catgacctta tgggactttc ctacttggca gtacatctac gtattagtca     600

tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg     660

actcacgggg atttccaagt ctccacccca ttgacgtcaa tgggagtttg ttttggcacc     720

aaaatcaacg ggactttcca aaatgtcgta caactccgc cccattgacg caaatgggcg     780

gtaggcgtgt acggtgggag gtctatataa gcagagctct ctggctaact agagaaccca     840

ctgcttactg gcttatcgaa attaatacga ctcactatag ggagacccaa gctggctagc     900

gtttaaactt aagctatcac aagtttgtac aaaaaagcag gcttaggaat gtctgactca     960

gtaattcttc gaagtataaa gaaatttgga gaggagaatg atggttttga gtcagataaa    1020
```

```
tcatataata atgataagaa atcaaggtta caagatgaga agaaaggtga tggcgttaga    1080

gttggcttct ttcaattgtt tcggttttct tcatcaactg acatttggct gatgtttgtg    1140

ggaagtttgt gtgcatttct ccatggaata gcccagccag gcgtgctact cattttttggc   1200

acaatgacag atgtttttat tgactacgac gttgagttac aagaactcca gattccagga    1260

aaagcatgtg tgaataacac cattgtatgg actaacagtt ccctcaacca gaacatgaca    1320

aatggaacac gttgtgggtt gctgaacatc gagagcgaaa tgatcaaatt tgccagttac    1380

tatgctggaa ttgctgtcgc agtacttatc acaggatata ttcaaatatg cttttgggtc    1440

attgccgcag ctcgtcagat acagaaaatg agaaaatttt actttaggag aataatgaga    1500

atggaaatag ggtggtttga ctgcaattca gtgggggagc tgaatacaag attctctgat    1560

gatattaata aaatcaatga tgccatagct gaccaaatgg cccttttcat tcagcgcatg    1620

acctcgacca tctgtggttt cctgttggga ttttttcaggg gttggaaact gaccttggtt    1680

attatttctg tcagccctct cattgggatt ggagcagcca ccattggtct gagtgtgtcc    1740

aagtttacgg actatgagct gaaggcctat gccaaagcag gggtggtggc tgatgaagtc    1800

atttcatcaa tgagaacagt ggctgctttt ggtggtgaga aaagagaggt tgaaaggtat    1860

gagaaaaatc ttgtgttcgc ccagcgttgg ggaattagaa aaggaatagt gatgggattc    1920

tttactggat tcgtgtggtg tctcatcttt ttgtgttatg cactggcctt ctggtacggc    1980

tccacacttg tcctggatga aggagaatat acaccaggaa cccttgtcca gattttcctc    2040

agtgtcatag taggagcttt aaatcttggc aatgcctctc cttgtttgga agcctttgca    2100

actggacgtg cagcagccac cagcattttt gagacaatag acaggaaacc catcattgac    2160

tgcatgtcag aagatggtta caagttggat cgaatcaagg gtgaaattga attccataat    2220

gtgaccttcc attatccttc cagaccagag gtgaagattc taaatgacct caacatggcc    2280

attaaaccag gggaaatgac agctctggta ggacccagtg gagctggaaa aagtacagca    2340

ctgcaactca ttcagcgatt ctatgacccc tgtgaaggaa tggtgaccgt ggatggccat    2400

gacattcgct ctcttaacat tcagtggctt agagatcaga ttgggatagt ggagcaagag    2460

ccagttctgt tctctaccac cattgcagaa aatattcgct atggcagaga agatgcaaca    2520

atggaagaca tagtccaagc tgccaaggag gccaatgcct acaacttcat catggacctg    2580

ccacagcaat ttgacaccct tgttggagaa ggaggaggcc agatgagtgg tggccagaaa    2640

caaagggtag ctatcgccag agccctcatc cgaaatccca agattctgct tttggacatg    2700

gccacctcag ctctggacaa tgagagtgaa gccatggtgc aagaagtgct gagtaagatt    2760

cagcatgggc acacaatcat ttcagttgct catcgcttgt ctacggtcag agctgcagat    2820

accatcattg gttttgaaca tggcactgca gtggaaagag ggacccatga agaattactg    2880

gaaaggaaag gtgtttactt cactctagtg actttgcaaa gccagggaaa tcaagctctt    2940
```

```
aatgaagagg acataaagga tgcaactgaa gatgacatgc ttgcgaggac ctttagcaga    3000

gggagctacc aggatagttt aagggcttcc atccggcaac gctccaagtc tcagctttct    3060

tacctggtgc acgaacctcc attagctgtt gtagatcata agtctaccta tgaagaagat    3120

agaaaggaca aggacattcc tgtgcaggaa gaagttgaac ctgccccagt taggaggatt    3180

ctgaaattca gtgctccaga atggccctac atgctggtag ggtctgtggg tgcagctgtg    3240

aacgggacag tcacaccctt gtatgccttt ttattcagcc agattcttgg gactttttca    3300

attcctgata aagaggaaca aaggtcacag atcaatggtg tgtgcctact ttttgtagca    3360

atgggctgtg tatctctttt cacccaattt ctacagggat atgcctttgc taaatctggg    3420

gagctcctaa caaaaaggct acgtaaattt ggtttcaggg caatgctggg gcaagatatt    3480

gcctggtttg atgacctcag aaatagccct ggagcattga caacaagact tgctacagat    3540

gcttcccaag ttcaaggggc tgccggctct cagatcggga tgatagtcaa ttccttcact    3600

aacgtcactg tggccatgat cattgccttc tcctttagct ggaagctgag cctggtcatc    3660

ttgtgcttct tccccttctt ggctttatca ggagccacac agaccaggat gttgacagga    3720

tttgcctctc gagataagca ggccctggag atggtgggac agattacaaa tgaagccctc    3780

agtaacatcc gcactgttgc tggaattgga aaggagaggc ggttcattga agcacttgag    3840

actgagctgg agaagccctt caagacagcc attcagaaag ccaatattta cggattctgc    3900

tttgcctttg cccagtgcat catgtttatt gcgaattctg cttcctacag atatggaggt    3960

tacttaatct ccaatgaggg gctccatttc agctatgtgt tcagggtgat ctctgcagtt    4020

gtactgagtg caacagctct tggaagagcc ttctcttaca ccccaagtta tgcaaaagct    4080

aaaatatcag ctgcacgctt ttttcaactg ctggaccgac aaccccaat cagtgtatac    4140

aatactgcag gtgaaaaatg ggacaacttc caggggaaga ttgattttgt tgattgtaaa    4200

tttacatatc cttctcgacc tgactcgcaa gttctgaatg gtctctcagt gtcgattagt    4260

ccagggcaga cactggcgtt tgttgggagc agtggatgtg gcaaaagcac tagcattcag    4320

ctgttggaac gtttctatga tcctgatcaa gggaaggtga tgatagatgg tcatgacagc    4380

aaaaaagtaa atgtccagtt cctccgctca aacattggaa ttgtttccca ggaaccagtg    4440

ttgtttgcct gtagcataat ggacaatatc aagtatggag acaacaccaa agaaattccc    4500

atggaaagag tcatagcagc tgcaaaacag gctcagctgc atgattttgt catgtcactc    4560

ccagagaaat atgaaactaa cgttgggtcc caggggtctc aactctctag aggggagaaa    4620

caacgcattg ctattgctcg ggccattgta cgagatccta aaatcttgct actagatgaa    4680

gccacttctg ccttagacac agaaagtgaa aagacggtgc aggttgctct agacaaagcc    4740

agagagggtc ggacctgcat tgtcattgcc catcgcttgt ccaccatcca gaacgcggat    4800
```

```
atcattgctg tcatggcaca gggggtggtg attgaaaagg ggacccatga agaactgatg   4860

gcccaaaaag gagcctacta caaactagtc accactggat cccccatcag ttgagaccca   4920

gctttcttgt acaaagtggt gattggtacc gagctcggat ccactagtcc agtgtggtgg   4980

aattctgcag atatccagca cagtggcggc cgctcgagtc tagagggccc gtttaaaccc   5040

gctgatcagc ctcgactgtg ccttctagtt gccagccatc tgttgtttgc ccctcccccg   5100

tgccttcctt gaccctggaa ggtgccactc ccactgtcct ttcctaataa aatgaggaaa   5160

ttgcatcgca ttgtctgagt aggtgtcatt ctattctggg gggtggggtg gggcaggaca   5220

gcaagggggā ggattgggaa gacaatagca ggcatgctgg ggatgcggtg ggctctatgg   5280

cttctgaggc ggaaagaacc agctggggct ctaggggta tccccacgcg ccctgtagcg   5340

gcgcattaag cgcggcgggt gtggtggtta cgcgcagcgt gaccgctaca cttgccagcg   5400

ccctagcgcc cgctcctttc gctttcttcc cttcctttct cgccacgttc gccggctttc   5460

cccgtcaagc tctaaatcgg ggcatccctt tagggttccg atttagtgct ttacggcacc   5520

tcgaccccaa aaaacttgat tagggtgatg gttcacgtag tgggccatcg ccctgataga   5580

cggttttttcg ccctttgacg ttggagtcca cgttctttaa tagtggactc ttgttccaaa   5640

ctggaacaac actcaaccct atctcggtct attcttttga tttataaggg attttgggga   5700

tttcggccta ttggttaaaa aatgagctga tttaacaaaa atttaacgcg aattaattct   5760

gtggaatgtg tgtcagttag ggtgtggaaa gtccccaggc tccccaggca ggcagaagta   5820

tgcaaagcat gcatctcaat tagtcagcaa ccaggtgtgg aaagtcccca ggctccccag   5880

caggcagaag tatgcaaagc atgcatctca attagtcagc aaccatagtc ccgcccctaa   5940

ctccgcccat cccgcccta actccgccca gttccgccca ttctccgccc catggctgac   6000

taatttttt tatttatgca gaggccgagg ccgcctctgc ctctgagcta ttccagaagt   6060

agtgaggagg cttttttgga ggcctaggct tttgcaaaaa gctcccggga gcttgtatat   6120

ccattttcgg atctgatcag cacgtgttga caattaatca tcggcatagt atatcggcat   6180

agtataatac gacaaggtga ggaactaaac catggccaag ttgaccagtg ccgttccggt   6240

gctcaccgcg cgcgacgtcg ccggagcggt cgagttctgg accgaccggc tcgggttctc   6300

ccgggacttc gtggaggacg acttcgccgg tgtggtccgg gacgacgtga ccctgttcat   6360

cagcgcggtc caggaccagg tggtgccgga caacaccctg gcctgggtgt gggtgcgcgg   6420

cctggacgag ctgtacgccg agtggtcgga ggtcgtgtcc acgaacttcc gggacgcctc   6480

cgggccggcc atgaccgaga tcggcgagca gccgtggggg cgggagttcg ccctgcgcga   6540

cccggccggc aactgcgtgc acttcgtggc cgaggagcag gactgacacg tgctacgaga   6600

tttcgattcc accgccgcct tctatgaaag gttgggcttc ggaatcgttt tccgggacgc   6660

cggctggatg atcctccagc gcggggatct catgctggag ttcttcgccc accccaactt   6720
```

```
gtttattgca gcttataatg gttacaaata aagcaatagc atcacaaatt tcacaaataa     6780

agcatttttt tcactgcatt ctagttgtgg tttgtccaaa ctcatcaatg tatcttatca     6840

tgtctgtata ccgtcgacct ctagctagag cttggcgtaa tcatggtcat agctgtttcc     6900

tgtgtgaaat tgttatccgc tcacaattcc acacaacata cgagccggaa gcataaagtg     6960

taaagcctgg ggtgcctaat gagtgagcta actcacatta attgcgttgc gctcactgcc     7020

cgctttccag tcgggaaacc tgtcgtgcca gctgcattaa tgaatcggcc aacgcgcggg     7080

gagaggcggt ttgcgtattg ggcgctcttc cgcttcctcg ctcactgact cgctgcgctc     7140

ggtcgttcgg ctgcggcgag cggtatcagc tcactcaaag gcggtaatac ggttatccac     7200

agaatcaggg gataacgcag gaaagaacat gtgagcaaaa ggccagcaaa aggccaggaa     7260

ccgtaaaaag gccgcgttgc tggcgttttt ccataggctc cgcccccctg acgagcatca     7320

caaaaatcga cgctcaagtc agaggtggcg aaacccgaca ggactataaa gataccaggc     7380

gtttccccct ggaagctccc tcgtgcgctc tcctgttccg accctgccgc ttaccggata     7440

cctgtccgcc tttctccctt cgggaagcgt ggcgctttct caatgctcac gctgtaggta     7500

tctcagttcg gtgtaggtcg ttcgctccaa gctgggctgt gtgcacgaac cccccgttca     7560

gcccgaccgc tgcgccttat ccggtaacta tcgtcttgag tccaacccgg taagacacga     7620

cttatcgcca ctggcagcag ccactggtaa caggattagc agagcgaggt atgtaggcgg     7680

tgctacagag ttcttgaagt ggtggcctaa ctacggctac actagaagga cagtatttgg     7740

tatctgcgct ctgctgaagc cagttacctt cggaaaaaga gttggtagct cttgatccgg     7800

caaacaaacc accgctggta gcggtggttt ttttgtttgc aagcagcaga ttacgcgcag     7860

aaaaaaagga tctcaagaag atcctttgat cttttctacg gggtctgacg ctcagtggaa     7920

cgaaaactca cgttaaggga ttttggtcat gagattatca aaaaggatct tcacctagat     7980

ccttttaaat taaaaatgaa gttttaaatc aatctaaagt atatatgagt aaacttggtc     8040

tgacagttac caatgcttaa tcagtgaggc acctatctca gcgatctgtc tatttcgttc     8100

atccatagtt gcctgactcc ccgtcgtgta gataactacg atacgggagg gcttaccatc     8160

tggccccagt gctgcaatga taccgcgaga cccacgctca ccggctccag atttatcagc     8220

aataaaccag ccagccggaa gggccgagcg cagaagtggt cctgcaactt tatccgcctc     8280

catccagtct attaattgtt gccgggaagc tagagtaagt agttcgccag ttaatagttt     8340

gcgcaacgtt gttgccattg ctacaggcat cgtggtgtca cgctcgtcgt ttggtatggc     8400

ttcattcagc tccggttccc aacgatcaag gcgagttaca tgatccccca tgttgtgcaa     8460

aaaagcggtt agctccttcg gtcctccgat cgttgtcaga agtaagttgg ccgcagtgtt     8520

atcactcatg gttatggcag cactgcataa ttctcttact gtcatgccat ccgtaagatg     8580
```

```
cttttctgtg actggtgagt actcaaccaa gtcattctga gaatagtgta tgcggcgacc   8640

gagttgctct tgcccggcgt caatacggga taataccgcg ccacatagca gaactttaaa   8700

agtgctcatc attggaaaac gttcttcggg gcgaaaactc tcaaggatct taccgctgtt   8760

gagatccagt tcgatgtaac ccactcgtgc acccaactga tcttcagcat cttttacttt   8820

caccagcgtt tctgggtgag caaaaacagg aaggcaaaat gccgcaaaaa agggaataag   8880

ggcgacacgg aaatgttgaa tactcatact cttccttttt caatattatt gaagcattta   8940

tcagggttat tgtctcatga gcggatacat atttgaatgt atttagaaaa ataaacaaat   9000

aggggttccg cgcacatttc cccgaaaagt gccacctgac gtc                       9043
```

<210> 6
<211> 9658
<212> DNA
<213> Artificial Sequence

<220>
<223> Plasmid

<400> 6

```
gacggatcgg gagatctccc gatcccctat ggtcgactct cagtacaatc tgctctgatg     60

ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggtcgct gagtagtgcg    120

cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc    180

ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatacg cgttgacatt    240

gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata    300

tggagttccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc    360

cccgcccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc    420

attgacgtca atgggtggac tatttacggt aaactgccca cttggcagta catcaagtgt    480

atcatatgcc aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt    540

atgcccagta catgacctta tgggactttc ctacttggca gtacatctac gtattagtca    600

tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg    660

actcacgggg atttccaagt ctccacccca ttgacgtcaa tgggagtttg ttttggcacc    720

aaaatcaacg ggactttcca aaatgtcgta caactccgcc ccattgacg caaatgggcg    780

gtaggcgtgt acggtgggag gtctatataa gcagagctct ctggctaact agagaaccca    840

ctgcttactg gcttatcgaa attaatacga ctcactatag ggagacccaa gctggctagc    900

agtccaggaa tcatgctgga gaagttctgc aactctactt tttggaattc ctcattcctg    960

gacagtccgg aggcagacct gccactttgt tttgagcaaa ctgttctggt gtggattccc   1020

ttgggcttcc tatggctcct ggccccctgg cagcttctcc acgtgtataa atccaggacc   1080

aagagatcct ctaccaccaa actctatctt gctaagcagg tattcgttgg ttttcttctt   1140
```
Page 15

```
attctagcag ccatagagct ggcccttgta ctcacagaag actctggaca agccacagtc    1200

cctgctgttc gatataccaa tccaagcctc tacctaggca catggctcct ggttttgctg    1260

atccaataca gcagacaatg gtgtgtacag aaaaactcct ggttcctgtc cctattctgg    1320

attctctcga tactctgtgg cactttccaa tttcagactc tgatccggac actcttacag    1380

ggtgacaatt ctaatctagc ctactcctgc ctgttcttca tctcctacgg attccagatc    1440

ctgatcctga tcttttcagc attttcagaa aataatgagt catcaaataa tccatcatcc    1500

atagcttcat tcctgagtag cattacctac agctggtatg acagcatcat tctgaaaggc    1560

tacaagcgtc ctctgacact cgaggatgtc tgggaagttg atgaagagat gaaaaccaag    1620

acattagtga gcaagtttga aacgcacatg aagagagagc tgcagaaagc caggcgggca    1680

ctccagagac ggcaggagaa gagctcccag cagaactctg gagccaggct gcctggcttg    1740

aacaagaatc agagtcaaag ccaagatgcc cttgtcctgg aagatgttga aaagaaaaaa    1800

aagaagtctg ggaccaaaaa agatgttcca aaatcctggt tgatgaaggc tctgttcaaa    1860

actttctaca tggtgctcct gaaatcattc ctactgaagc tagtgaatga catcttcacg    1920

tttgtgagtc ctcagctgct gaaattgctg atctcctttg caagtgaccg tgacacatat    1980

ttgtggattg gatatctctg tgcaatcctc ttattcactg cggctctcat tcagtctttc    2040

tgccttcagt gttatttcca actgtgcttc aagctgggtg taaaagtacg gacagctatc    2100

atggcttctg tatataagaa ggcattgacc ctatccaact tggccaggaa ggagtacacc    2160

gttggagaaa cagtgaacct gatgtctgtg gatgcccaga agctcatgga tgtgaccaac    2220

ttcatgcaca tgctgtggtc aagtgttcta cagattgtct tatctatctt cttcctatgg    2280

agagagttgg gaccctcagt cttagcaggt gttggggtga tggtgcttgt aatcccaatt    2340

aatgcgatac tgtccaccaa gagtaagacc attcaggtca aaaatatgaa gaataaagac    2400

aaacgtttaa agatcatgaa tgagattctt agtggaatca agatcctgaa atattttgcc    2460

tgggaacctt cattcagaga ccaagtacaa aacctccgga agaaagagct caagaacctg    2520

ctggccttta gtcaactaca gtgtgtagta atattcgtct tccagttaac tccagtcctg    2580

gtatctgtgg tcacattttc tgtttatgtc ctggtggata gcaacaatat tttggatgca    2640

caaaaggcct tcacctccat taccctcttc aatatcctgc gctttcccct gagcatgctt    2700

cccatgatga tctcctccat gctccaggcc agtgtttcca cagagcggct agagaagtac    2760

ttgggagggg atgacttgga cacatctgcc attcgacatg actgcaattt tgacaaagcc    2820

atgcagtttt ctgaggcctc ctttacctgg gaacatgatt cggaagccac agtccgagat    2880

gtgaacctgg acattatggc aggccaactt gtggctgtga taggccctgt cggctctggg    2940

aaatcctcct tgatatcagc catgctggga gaaatggaaa atgtccacgg gcacatcacc    3000
```

```
atcaagggca ccactgccta tgtcccacag cagtcctgga ttcagaatgg caccataaag   3060

gacaacatcc tttttggaac agagtttaat gaaaagaggt accagcaagt actggaggcc   3120

tgtgctctcc tcccagactt ggaaatgctg cctggaggag atttggctga gattggagag   3180

aagggtataa atcttagtgg gggtcagaag cagcggatca gcctggccag agctacctac   3240

caaaatttag acatctatct tctagatgac cccctgtctg cagtggatgc tcatgtagga   3300

aaacatattt ttaataaggt cttgggcccc aatggcctgt tgaaaggcaa gactcgactc   3360

ttggttacac atagcatgca ctttcttcct caagtggatg agattgtagt tctggggaat   3420

ggaacaattg tagagaaagg atcctacagt gctctcctgg ccaaaaaagg agagtttgct   3480

aagaatctga agacatttct aagacataca ggccctgaag aggaagccac agtccatgat   3540

ggcagtgaag aagaagacga tgactatggg ctgatatcca gtgtggaaga gatccccgaa   3600

gatgcagcct ccataaccat gagaagagag aacagctttc gtcgaacact tagccgcagt   3660

tctaggtcca atggcaggca tctgaagtcc ctgagaaact ccttgaaaac tcggaatgtg   3720

aatagcctga aggaagacga agaactagtg aaaggacaaa aactaattaa gaaggaattc   3780

atagaaactg gaaaggtgaa gttctccatc tacctggagt acctacaagc aataggattg   3840

ttttcgatat tcttcatcat ccttgcgttt gtgatgaatt ctgtggcttt tattggatcc   3900

aacctctggc tcagtgcttg gaccagtgac tctaaaatct tcaatagcac cgactatcca   3960

gcatctcaga gggacatgag agttggagtc tacggagctc tgggattagc ccaaggtata   4020

tttgtgttca tagcacattt ctggagtgcc tttggtttcg tccatgcatc aaatatcttg   4080

cacaagcaac tgctgaacaa tatccttcga gcacctatga gattttttga cacaacaccc   4140

acaggccgga ttgtgaacag gtttgccggc gatatttcca cagtggatga caccctgcct   4200

cagtccttgc gcagctggat tacatgcttc ctggggataa tcagcaccct tgtcatgatc   4260

tgcatggcca ctcctgtctt caccatcatc gtcattcctc ttggcattat ttatgtatct   4320

gttcagatgt tttatgtgtc tacctcccgc cagctgaggc gtctggactc tgtcaccagg   4380

tccccaatct actctcactt cagcgagacc gtatcaggtt tgccagttat ccgtgccttt   4440

gagcaccagc agcgatttct gaaacacaat gaggtgagga ttgacaccaa ccagaaatgt   4500

gtctttttcct ggatcacctc caacaggtgg cttgcaattc gcctggagct ggttgggaac   4560

ctgactgtct tctttttcagc cttgatgatg gttatttata gagatacccct aagtgggggac   4620

actgttggct ttgttctgtc caatgcactc aatatcacac aaaccctgaa ctggctggtg   4680

aggatgacat cagaaataga gaccaacatt gtggctgttg agcgaataac tgagtacaca   4740

aaagtggaaa atgaggcacc ctgggtgact gataagaggc ctccgccaga ttggcccagc   4800

aaaggcaaga tccagtttaa caactaccaa gtgcggtacc gacctgagct ggatctggtc   4860

ctcagaggga tcacttgtga cattggtagc atggagaaga ttggtgtggt gggcaggaca   4920
```

```
ggagctggaa agtcatccct cacaaactgc ctcttcagaa tcttagaggc tgccggtggt    4980

cagattatca ttgatggagt agatattgct tccattgggc tccacgacct ccgagagaag    5040

ctgaccatca tcccccagga ccccatcctg ttctctggaa gcctgaggat gaatctcgac    5100

cctttcaaca actactcaga tgaggagatt tggaaggcct tggagctggc tcacctcaag    5160

tcttttgtgg ccagcctgca acttgggtta tcccacgaag tgacagaggc tggtggcaac    5220

ctgagcatag gccagaggca gctgctgtgc ctgggcaggg ctctgcttcg gaaatccaag    5280

atcctggtcc tggatgaggc cactgctgcg gtggatctag agacagacaa cctcattcag    5340

acgaccatcc aaaacgagtt cgcccactgc acagtgatca ccatcgccca caggctgcac    5400

accatcatgg acagtgacaa ggtaatggtc ctagacaacg gaagattat agagtgcggc    5460

agccctgaag aactgctaca aatccctgga cccttttact ttatggctaa ggaagctggc    5520

attgagaatg tgaacagcac aaaattctag cttaagcttg gtaccgagct cggatccact    5580

agtccagtgt ggtggaattc tgcagatatc cagcacagtg gcggccgctc gagtctagag    5640

ggcccgttta aacccgctga tcagcctcga ctgtgccttc tagttgccag ccatctgttg    5700

tttgcccctc ccccgtgcct tccttgaccc tggaaggtgc cactcccact gtcctttcct    5760

aataaaatga ggaaattgca tcgcattgtc tgagtaggtg tcattctatt ctggggggtg    5820

gggtggggca ggacagcaag ggggaggatt gggaagacaa tagcaggcat gctggggatg    5880

cggtgggctc tatggcttct gaggcggaaa gaaccagctg gggctctagg gggtatcccc    5940

acgcgccctg tagcggcgca ttaagcgcgg cgggtgtggt ggttacgcgc agcgtgaccg    6000

ctacacttgc cagcgcccta gcgcccgctc ctttcgcttt cttcccttcc tttctcgcca    6060

cgttcgccgg ctttccccgt caagctctaa atcggggcat ccctttaggg ttccgattta    6120

gtgctttacg gcacctcgac cccaaaaaac ttgattaggg tgatggttca cgtagtgggc    6180

catcgccctg atagacggtt tttcgccctt tgacgttgga gtccacgttc tttaatagtg    6240

gactcttgtt ccaaactgga acaacactca accctatctc ggtctattct tttgatttat    6300

aagggatttt ggggatttcg gcctattggt taaaaaatga gctgatttaa caaaaattta    6360

acgcgaatta attctgtgga atgtgtgtca gttagggtgt ggaaagtccc caggctcccc    6420

aggcaggcag aagtatgcaa agcatgcatc tcaattagtc agcaaccagg tgtggaaagt    6480

ccccaggctc cccagcaggc agaagtatgc aaagcatgca tctcaattag tcagcaacca    6540

tagtcccgcc cctaactccg cccatcccgc ccctaactcc gcccagttcc gcccattctc    6600

cgccccatgg ctgactaatt ttttttattt atgcagaggc cgaggccgcc tctgcctctg    6660

agctattcca gaagtagtga ggaggctttt ttggaggcct aggcttttgc aaaaagctcc    6720

cgggagcttg tatatccatt ttcggatctg atcagcacgt gttgacaatt aatcatcggc    6780
```

```
atagtatatc ggcatagtat aatacgacaa ggtgaggaac taaaccatgg ccaagttgac   6840

cagtgccgtt ccggtgctca ccgcgcgcga cgtcgccgga gcggtcgagt tctggaccga   6900

ccggctcggg ttctcccggg acttcgtgga ggacgacttc gccggtgtgg tccgggacga   6960

cgtgaccctg ttcatcagcg cggtccagga ccaggtggtg ccggacaaca ccctggcctg   7020

ggtgtgggtg cgcggcctgg acgagctgta cgccgagtgg tcggaggtcg tgtccacgaa   7080

cttccgggac gcctccgggc cggccatgac cgagatcggc gagcagccgt gggggcggga   7140

gttcgccctg cgcgacccgg ccggcaactg cgtgcacttc gtggccgagg agcaggactg   7200

acacgtgcta cgagatttcg attccaccgc cgccttctat gaaaggttgg gcttcggaat   7260

cgttttccgg gacgccggct ggatgatcct ccagcgcggg gatctcatgc tggagttctt   7320

cgcccacccc aacttgttta ttgcagctta taatggttac aaataaagca atagcatcac   7380

aaatttcaca aataaagcat ttttttcact gcattctagt tgtggtttgt ccaaactcat   7440

caatgtatct tatcatgtct gtataccgtc gacctctagc tagagcttgg cgtaatcatg   7500

gtcatagctg tttcctgtgt gaaattgtta tccgctcaca attccacaca acatacgagc   7560

cggaagcata aagtgtaaag cctggggtgc ctaatgagtg agctaactca cattaattgc   7620

gttgcgctca ctgcccgctt ccagtcgggg aaacctgtcg tgccagctgc attaatgaat   7680

cggccaacgc gcggggagag gcggtttgcg tattgggcgc tcttccgctt cctcgctcac   7740

tgactcgctg cgctcggtcg ttcggctgcg gcgagcggta tcagctcact caaaggcggt   7800

aatacggtta tccacagaat caggggataa cgcaggaaag aacatgtgag caaaaggcca   7860

gcaaaaggcc aggaaccgta aaaaggccgc gttgctggcg tttttccata ggctccgccc   7920

ccctgacgag catcacaaaa atcgacgctc aagtcagagg tggcgaaacc cgacaggact   7980

ataaagatac caggcgtttc cccctggaag ctccctcgtg cgctctcctg ttccgaccct   8040

gccgcttacc ggatacctgt ccgcctttct cccttcggga agcgtggcgc tttctcaatg   8100

ctcacgctgt aggtatctca gttcggtgta ggtcgttcgc tccaagctgg gctgtgtgca   8160

cgaacccccc gttcagcccg accgctgcgc cttatccggt aactatcgtc ttgagtccaa   8220

cccggtaaga cacgacttat cgccactggc agcagccact ggtaacagga ttagcagagc   8280

gaggtatgta ggcggtgcta cagagttctt gaagtggtgg cctaactacg gctacactag   8340

aaggacagta tttggtatct gcgctctgct gaagccagtt accttcggaa aaagagttgg   8400

tagctcttga tccggcaaac aaaccaccgc tggtagcggt ggtttttttg tttgcaagca   8460

gcagattacg cgcagaaaaa aaggatctca agaagatcct ttgatctttt ctacggggtc   8520

tgacgctcag tggaacgaaa actcacgtta agggattttg gtcatgagat tatcaaaaag   8580

gatcttcacc tagatccttt taaattaaaa atgaagtttt aaatcaatct aaagtatata   8640

tgagtaaact tggtctgaca gttaccaatg cttaatcagt gaggcaccta tctcagcgat   8700
```

```
ctgtctattt cgttcatcca tagttgcctg actccccgtc gtgtagataa ctacgatacg   8760

ggagggctta ccatctggcc ccagtgctgc aatgataccg cgagacccac gctcaccggc   8820

tccagattta tcagcaataa accagccagc cggaagggcc gagcgcagaa gtggtcctgc   8880

aactttatcc gcctccatcc agtctattaa ttgttgccgg gaagctagag taagtagttc   8940

gccagttaat agtttgcgca acgttgttgc cattgctaca ggcatcgtgg tgtcacgctc   9000

gtcgtttggt atggcttcat tcagctccgg ttcccaacga tcaaggcgag ttacatgatc   9060

ccccatgttg tgcaaaaaag cggttagctc cttcggtcct ccgatcgttg tcagaagtaa   9120

gttggccgca gtgttatcac tcatggttat ggcagcactg cataattctc ttactgtcat   9180

gccatccgta agatgctttt ctgtgactgg tgagtactca accaagtcat tctgagaata   9240

gtgtatgcgg cgaccgagtt gctcttgccc ggcgtcaata cgggataata ccgcgccaca   9300

tagcagaact ttaaaagtgc tcatcattgg aaaacgttct tcggggcgaa aactctcaag   9360

gatcttaccg ctgttgagat ccagttcgat gtaacccact cgtgcaccca actgatcttc   9420

agcatctttt actttcacca gcgtttctgg gtgagcaaaa acaggaaggc aaaatgccgc   9480

aaaaaaggga ataagggcga cacggaaatg ttgaatactc atactcttcc tttttcaata   9540

ttattgaagc atttatcagg gttattgtct catgagcgga tacatatttg aatgtattta   9600

gaaaaataaa caaatagggg ttccgcgcac atttccccga aaagtgccac ctgacgtc     9658
```